THE PASSPORT HOUSE LETTER

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New publication premiers for Apple II owners

WELCOME to the premier issue of the Passport House Letter! Unless you are a charter subscriber who responded to our announcements posted on various electronic services, or heard about us through a user group, our new publication is probably a total surprise.

Passport House started work in publishing an Apple II publication early in 1992. Since then, we have worked to design a medium through which users can find out what's new in the Apple II world, discover special projects they can take part in, and learn about technologies they can put to work. Our name reflects our commitment in helping users all over the world get the information they need, as well as helping them distribute their work to others to foster new Apple II development.

We live on feedback

This publication is yours. We ask that you take a minute to think about you'd like to see, things you'd like to know about, and questions you'd like answered. Then write us. We appreciate your comments and suggestions, and will put them to work. We've compiled a section outlining areas we are researching for future issues: the Passport House Report. We've included a report card for you to tell us what you think.

Publication design and features

Our simple design allows us to go to press very quickly, ensuring that you get the news you need fast. Yet, although we are more interested in providing timely and accurate information than littering our magazine with design frills, we're working to make our publication easy to understand and fun to read. What can you look forward to?

Well, we don't keep our Opinions to our self; you can read all about what we're thinking on page three. And take a look at our reader's questions, comments and opinions on page two.

Our Product Test Drives are hands-on reports that examine the ease of use, functionality, quality and usefulness of products of interest to Apple II users. At the end, we'll tell you if we recommend buying—or avoiding—the product.

Maximum Overdrive takes a look at how you can get the most Apple II bang for your bucks. This month, we look at adding memory, and how both the 8-bit II's and the IIGS can make use of more memory to run your II harder, faster and more efficiently.

Industry People examines people making a difference in the Apple II world. This issue, we look at Tim Tobin's work in saving older applications from an early grave—read all about it on page ten.

New Products and Late News cover the newest releases and happenings of interest to Apple II users. Late News is compiled just days before going to press, so it's still hot when it gets to you.

Our final page is the domain of Eran Paige. Eran is hard to reduce to a two sentence blurb. We'll let you take a look and form your own opinion.

We produce the Passport House Letter on Apple II computers. We are experienced in working with the products we write about, so you know when we make a statement, its not a guess or likelihood, we've checked it out. When we do error, tell us and we'll make a correction.

The last paragraph

So take a look. Test us out. If you like what we're doing, then tell your friends. And tell companies you deal with that you read our publication. On the other hand, if you don't like us, please tell us why. We'd like to be useful to the widest group of Apple II users as we can. Thanks. Now kick back and enjoy our premier issue.

Interested in subscribing to the Passport House Letter?

Want to keep on top of what's going on in the Apple II world? The Passport House Letter will give you a monthly record of who's who, what's new and how you can get the most from your Apple II. The Passport House Letter is available for just $24 US per year. That's $2 per month for a constant update of news and events in the Apple II world. Sign up for the PHL today!

Interested in advertising in the Passport House Letter?

Trying to find the knowlegable Apple II users? They're reading the Passport House Letter! We can provide you with a very effective yet inexpensive way to reach your market. An attention getting full page is just $399—you can't afford to miss out! For more information on advertising, write:
Passport House Ad Dept., P.O. Box 145
Miles City, MT 59301-0145 USA.

Questions & comments

Let us (and our readers) know what's on your mind. Address all questions & comments to "Letters Dept." at our regular address.

Letters were sent to Passport House in responce to announcments on several information services.

Dear Sirs,

I purchased an Apple II+ in 1983 and replaced it with an Apple IIgs in 1988. Over the years I've been very happy with my choice of computers. The bottom line is that the IIgs continues to serve my computing needs. As new IIgs software and hardware products continually debut, my system should continue to satisfy my needs for many, many years to come. I am amazed at the caliber of new products recently introduced and those on the horizon. Noteworthy are: the Quickie scanner and InWords OCR combination; Pointless TrueType font system and Harmonie printer driver combination; Hewlett Packard Inkjet printers; and ZipGS accelerators. These have opened up new capabilities on my IIgs. I'm eager for the SoundMeister sound board, AutoArk/HardPressed file compression programs, and enhancements to my current software (like TimeOut Grammar for my AppleWorks 3.0). This doesn't even touch on the hundreds of shareware/freeware programs which have increased the ease and enjoyment of using my IIgs.

I look forward to your Apple II newsletter in December, it's always nice to have a new perspective in the Apple II world. I would suggest that any product reviews you print should be very in-depth. I don't need another cursory look at a new program or device. Every item has its advantages and minuses, nothing's perfect. So I want an honest report. I wish you the best of luck with your new publication!

David Grenda
Shreveport, LA

Dear Sirs,

Enclosed is a check for $9.95 for the introductory price of a one year subscription to your Apple II newsletter.

I wish you all the success in the world! Anyway I can support the Apple IIGS and other Apple II models, I will help.

Marty McMenamin
Fairfield, CA

Passport House,

As president of the Billings Apple Users Group, I am asking your permission to include any article you publish in our newsletter.

May your business effort do well.

Bob Reynolds
Billings, MT

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Hi,

I'd like to know the subscription rates for Passport House for Germany. Do you accept VISA-card for payment?

Udo Huth
via GEnie

If you know how much extra it costs to get an ounce of airmail to you every month, just add it on to the current subscription price and we'll be pleased to make a special trip to the post office and send it to you with stamps. If you're not sure how much postage you need, we will find out for you.

We don't yet accept credit cards; however, besides personal checks and money orders, you may send us an electronic credit payment via GEnie's Gift of Time.

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Our Opinion

The issue: Apple has announced that they are removing the Apple IIGS from dealer price lists at the end of this year. Many Apple II users have complained that Apple should support the Apple II better, and that this is just another example of Apple's rotten treatment of the II. Our staff has compiled a viewpoint we'd like you to consider.

Apple & the Dealers

Apple's action has very little significance. Who, if they wanted a IIGS, would go to a dealer? Most dealers know nothing about the Apple II, so they can't supply any useful information to buyers anyway. Prices at dealerships are astronomical as well, often at least twice as much as a quality mail order outlet. Few dealers provide service worth their premium prices.

Our experiences with retail dealers of any computer platform have been unimpressive, to say the least. Unfortunately, everything bad about car dealerships has been ported to the computer industry. Too many dealerships are staffed with sales people that know nothing about what they're selling, and many act like they think confusing a potential buyer is the best way to make a sale. Is it a such a bad thing that the IIGS is not available through these outlets?

Many users have likewise asked for Performa-style retail marketing of the Apple II. Are you sure? Every retailer we've seen selling them is at least as bad as computer dealerships.

What about Apple?

Many would point out Apple has rarely advertised the IIGS since its introduction in 1986. And, besides the IIc+ and the one megabyte IIGS (ROM 3), no new Apple II's have been released. And, they feel, the millions of dollars from strong Apple II sales should have been reinvested in the Apple II, not used just to fund Macintosh development.

It is true that Apple has done nothing to publicize the Apple II since the IIGS' introduction. Apple has, however, unquestionably done more to support the Apple II than another computer manufacturer would have. Take into consideration that Apple started designing a 16-bit Apple II while the Mac was still in its infancy. The next Apple II was apparently thought of as a safety net if the Mac were to fail. But it didn't. The IIGS was released anyway, with a toolbox-supported graphic interface borrowed from the Mac.

Apple must have realized right away that an Apple II that performed like their Macintosh was not compatible with their marketing plan. It would be difficult to battle the MS-DOS machines by attacking their command line, text based interface while yet actively promoting their own Apple II that ran a command line, text based interface and a graphic, windowing environment as well.

Whatever their exact reasons, Apple has chosen not to develop a new generation of Apple II. Apple could have dumped the IIGS entirely, but that didn't happen. Rather, Apple has chosen to continue support for the Apple II by developing new generations of system software and peripherals.

Support for the II

Anyone who experienced life with the IIGS' original System 1.0 can appreciate how much Apple has done for the IIGS. Apple has documented the IIGS very well, as well as having developed a new operating system for it. This favored treatment has resulted in a easy to use environment that fosters interapplication compatibility, peace and serenity in the IIGS realm. In addition, Apple has released the Video Overlay Card, redesigned their SCSI card, introduced the new SIWM 3.5 inch SuperDrive interface, and produced HyperCard IIGS.

Apple's open-ended design of the IIGS has enabled it to fare much better than other computers of its time. A IIGS can keep up today by adding peripheral cards that speed it up, allow it to talk with new devices and more. Would you prefer a Mac-esque game of computer system tag, buying up generation after generation of expensive systems that stay state of the art for a fruitfly's lifespan?

Instead of wasting time and energy complaining about what Apple hasn't done, why not enjoy what they have done lately? Have you ever thanked Apple for spending the money and time developing System 6.0 or HyperCard IIGS? The Apple II community has got to be more reasonable about what they expect from Apple.

If you want a new model of your computer coming out every year, buy a Macintosh. If you want the kind of support Sears or Wards provides, buy a Performa. But if you want a trustworthy system that gets the job done, with unlimited expansion possibilities to meet your needs in the 90's, stick with your Apple II. Developers are constantly producing new tools for use on the II. Apple is still releasing new system software, and the IIGS is still available from many outlets. Rejoice with your II.

The Forum

Here's your opportunity to tell us what's on your mind. Each issue, we examine a subject of intrest to Apple II users and developers. We'll ask for your ideas on the subject. Responces will be printed in our letters department. So tell us what you think! You'll get free airtime, and our readers will have the opportunity to benefit from a wide range of viewpoints.

The Topic: A lot of people have complained that Apple isn't supporting the Apple II. What do you think the Apple II needs? What kind of support would you like to see implemented?

Write us with your answers. Be specific. Be reasonable. Besides printing your letters, we'll put together a condensed compilation of your best ideas and send it to Apple for consideration. (We suggest that you do not organize letter writing campaigns directly to Apple; they'll send it to their Apple II people and it will just slow down their work.)

You can find our address listed the on opposite page.

PRODUCT TEST DRIVES

This issue: Apple's StyleWriter and Pointless from WestCode Software team up to bring high quality output for GS/OS users

StyleWriter Inkjet Printer

Apple Computer	Street Price	$350
20525 Mariani Ave.	Requires:	System 6.0
Cupertino, CA 95014	Tested as:	Driver 1.0
(408) 996-1010		Printer ROM 2.0

Inkjet printers have put very high quality printing into the hands of small business, homeowners and students. Apple's StyleWriter is a repackaging of Cannon's popular BJ10e with added support for TrueType and neo-Apple styling.

What makes the StyleWriter news for the Apple II, of course, is Apple's GS/OS driver, released as part of System 6.0. Remember however, that the StyleWriter will only work with applications that take advantage of the GS/OS Print Manager. To understand why, see the accompanying article, "Teaming up with the II."

On first examination, the StyleWriter looks like a new baby: very small, very cute, and very fragile. Opening the front or pulling the paper jam lever are almost a little scary at first. But rest assured that the printer is built well enough to live a natural lifetime.

The StyleWriter is packaged with a well-designed sheet feeder, so it's ready to go right out of the box. The actual printer part is easily removable from the sheet feeder for taking it along on a trip or commuting back and forth from work. Standing alone, the printer accepts standard long envelopes and single sheets straight through from a slot in the back, or loops single pages through a passage in front. A lever inside the front cover adjusts the platen to print on standard paper and transparencies or heavier stock and envelopes.

Coupled with the sheet feeder, the StyleWriter can go through fifty sheets without reloading, although we found with slick paper it often drew up to three pages through at once; a minor inconvenience at most, as it did not affect the printing page's quality. Envelopes can be loaded through the back of the sheet feeder, although only one at a time. It isn't designed for heavy duty envelope printing.

The feeder also incorporates a sheet catcher, which pops out the front and adjusts to grab letter, European sized, or legal pages. Although helpful, extending the catcher is not necessary if desk space won't allow it. However, positioning the printer too close to a coffee mug or other obstruction may impede a printing sheet's progress, and could cause the print head to distort line spacing.

The Driver

Upon opening the StyleWriter box, you'll find everything you need to get started...except the new driver; you'll need a copy of System 6.0 for that. Install the driver, choose it in the Control Panel and your StyleWriter is ready to roll.

The manual says nothing about using the printer with the GS. But don't worry if you don't have the System 6.0 manual as well; working with the driver is so easy, you won't need any instructions.

Print Setup lets you choose between letter, legal, A4 and B5 paper sizes, as well as #10 envelopes, with manual or automatic paper feed. It allows for printing in condensed mode, for a correct text aspect ratio, but is limited to actual size printing. You also choose between 180 dots per inch, which prints a page in about a minute at good quality, or 360 dpi, which prints a very sharp page in two.

The Print dialog box also lets you choose quality and paper feed settings, besides number of copies and pages to be printed.

To print on single sheets or envelopes, follow the simple instructions that pop up in a dialog box during manual printing. While printing, the driver informs you of the pages printing, tells you what it's doing, informs you of any errors and immediately cancels printing when you hit command + period.

We'd like to see print scaling added in a future version, as well as landscape printing support. It would really be choice to allow defined page sizes with page tiling. This would allow tabloid size page design, posters and banner printing with GS page layout programs. A new driver for the StyleWriter is supposed to be released with System 6.1.

Output

StyleWriter printing with the GS is impressive. At 360 dpi, even hairline fonts look great at small point sizes. The driver achieves such results by asking the system for fonts five times larger that the screen display of 72 dpi, and then prints them at 360 dpi. Output is five times sharper, but is the same size as displayed on the screen, or very close.

Often, the higher resolution of the printer means that the kerning, or spacing between letters on a line, is tighter. With some fonts, the driver spaces kerning too tight, which leads to lines that look like single words. On occasion, the driver will even flip out and print a spurious tab or leave out a space. Sometimes a font will print with super wide kerning. And changing fonts within a line is almost sure to cause bizarre spacing. But remember, this is the first release of this driver. Few products are entirely stable at this stage.

At 180 dpi, printing is twice as fast, half as dark and often slightly slanted in the direction of the print head's passing. But draft mode is still better than the ImageWriter's best mode, and a whole lot quieter, as well.

Teaming up with the II

The StyleWriter is a Macintosh printer. Unlike the ImageWriter, it expects from the computer a page imaging, not just a simple flow of character codes. This makes it impossible for Apple IIs to print to it the way they would to an ImageWriter. A brief overview of how the GS prints is helpful in understanding how the new driver allows it to work with the StyleWriter.

Programs based in GS/OS work directly with its Print Manager, which in turn uses the port and device drivers currently selected in the printer control panel. The port driver accepts information from the program and routes it through the selected port. It controls speed of communication through the port, handshaking, and other features that are set in the printer or modem port control panel.

Device drivers do the actual translations to talk with the device. With the StyleWriter, it draws the page at the printer's resolution.

The flexible system used by GS/OS allows different applications to share printing support, rather than implement it themselves. Programs operating under ProDOS 8, such as AppleWorks, and even a few GS Desktop programs, do not take advantage of the GS/OS Print Manager. They only work with specific printers they were written to support, and can not take advantage of add on drivers.

Of course, you can use your AppleWorks files with a GS/OS program like AppleWorks GS to print them out on the StyleWriter, but if you are a diehard AppleWorks fan, you'll be better suited buying an printer that AppleWorks supports.

In draft, the driver prints using two and a half times oversize fonts, rounded down to the nearest point size. Nine point text needs a 22 point font to print in draft, for example. Draft mode is suitable for letters, but because full resolution is so impressively sharp, and not an awful lot slower, you may do most of your work at best quality. Long, multi-page documents are a good candidate for draft mode printing however.

Recommendations

Who should get a StyleWriter? It is not for eight-bit users, of course. It doesn't do color and it's no speed demon. And it isn't networkable, nor is it qualified for very heavy duty use.

But for moderate level printing at home or for a small business however, the StyleWriter is perfect. Its silent operation, convenient envelope and single sheet feed, portability and small footprint, and its super sharp output are all reasons for the average GS user to upgrade from their ImageWriter.

Pointless TrueType Interpreter

WestCode Software	Street Price	$50
15050 Avenue of Science	Requires:	GS/OS 5.0
Suite 112	Tested as:	Version 1.0
San Diego, CA 92128	Version 2.0 upgrade	
(619) 679-9200	available now	

The Beagle Brothers who formed WestCode Software have produced some of the greatest stuff yet for the Apple II. Pointless, one of Alan Bird's latest accomplishments for WestCode, brings TrueType font technology to GS/OS, opening the way for high quality text display and output.

Not only does Pointless bring TrueType fonts to the Apple II world, it also changes the way the GS organizes its fonts. TrueType fonts are defined outlines with no specific size that can be scaled to any point size, hence the name for the utility. For more information on how outlines work, see "Outlines and Bitmaps."

Before Pointless

Without Pointless, GS/OS keeps a folder on the system disk, Fonts, that stores bitmap fonts for the system to use. Fonts cannot be added after startup without an installer such as François Uhrich's shareware Font-DA Installer. When a font is requested, the system checks to see if a bit map is available in the requested point size. If a bitmap is available in that size, then used by QuickDraw II to draw the characters on the screen. If one is not, the Font Manager does its best to scale an available font to the size requested. Because bitmaps are size dependent, they cannot be scaled very much before becoming illegible.

When printing, drivers often ask for oversize fonts to print at higher resolutions than the screen. In ImageWriter's best mode, the driver asks for a double size font, then shrinks it down to print at 144 dpi. The StyleWriter driver asks for a font five times larger to print at 360 dpi (see review).

Having oversize font available requires both RAM and disk space on the system disk...lots. As an example, the Monaco 9 point bitmap is about 2.5K. Size 12 is only 3K. But 60 point is 25K and 200 point 234K!

Until recently, font sizes that large were usually unnecessary, but with font oversizing for higher resolution printers, a 200 point font is needed to print a 40 point typeface at 360 dpi. To have enough fonts to be able to print at a variety of sizes in high resolution requires a

Pointless review continues on page 9

Outlines and Bitmaps

Since Apple released its first LaserWriter, the Macintosh has used the PostScript page description language from Adobe to print images in higher resolution than the screen displays. PostScript mathematically describes how the document to be printed looks, rather than defining how it is made up in dots.

QuickDraw on the Macintosh, and its cousin QuickDraw II inside the GS, are internal routines that draw the elements on the screen, at about 72 dots per inch. While looking acceptable on the screen, text at 72 dpi on paper looks very blocky. To print at a higher resolution, the computer translates its internal description to PostScript code, which is sent to the printer.

High resolution PostScript printers image the page at their own resolution: lasers at 300-1200 dpi; inkjets at 300-360 dpi; high level thermal transfer and dye sublimation color printers, 200 dpi. But PostScript printers are expensive, because they must incorporate their own computing power to quickly image a page from four to over ten times the resolution of the screen.

Until recently, PostScript was primarily used only to speak between devices. Fonts used on the screen were bitmaps, or pixel images of a specific point size. To print to a PostScript printer required two fonts: a bitmap for the computer to display on the screen and a PostScript outline to send to the printer. Apple, in association with Microsoft, then announced TrueType, an outline font system to be used by both printers and for screen displays.

In response, Adobe Systems released Adobe Type Manager, a system for using its PostScript outlines for screen displays. ATM is available in both Mac and IBM versions, but not for the Apple II. Incidentally, Steve Jobs, in designing his NeXT computer, licensed PostScript as an internal page description language (like QuickDraw) so it has the functions of ATM built in. Adobe also released information on their proprietary PostScript font format, allowing third parties to produce Adobe "Type One" fonts.

By the time Apple released TrueType, PostScript fonts had a large installed base. Apple has made TrueType a part of System 7 for the Mac, but many Mac users continue to use PostScript because it has been widely available for so long. Microsoft likewise has made TrueType part of Windows, their shell for MS-DOS.

Both TrueType and PostScript are high quality font technologies. And font outlines can be converted from one to the other, using outline font utilities. Font utilities for the Apple II, such as Font Factory GS, by Seven Hills Software, deal with bitmap fonts, which can be drawn at various sizes and manipulated one dot at a time. Outline fonts are not drawn like bitmaps, but they can be altered. Because they are mathematically defined, they can be warped, stretched and curved along arcs and by manipulating their geometric definitions. No outline font utilities are yet available for the Apple II, but possibly, if users ask for it, forward thinking programmers who know about outline fonts will write one.

Besides a stand alone application, we'd like to see system font distortion, the way PageMaker 4.0 allows. In PageMaker, you can set the width of a font from around 70% to about 150%. It recalculates the outline of the font and you get very good looking results in a totally new style, narrow or wide. Pointless 3.0 could allow you to adjust width—and height—ratios system wide for all GS/OS programs. Why not ask WestCode about it when you order Pointless or upgrade to the new 2.0?

MAXIMUM OVERDRIVE

Computer users seem obsessed with power, ready to spend a lot of money to improve the performance of their machine. However, it's easy to throw money away trying to better performance and end with little to show for it. Maximum Overdrive will show you how to spend your money most effectively. We'll help you understand how specific bottlenecks can be broken for the most effective results, at the least drain to your pocket book. This month, we'll examine how adding memory can boost performance. We'll consider how RAM is used differently in 8-bit Apples and the GS, and how both can benefit from extra bytes.

More Memory for Performance

The memory reserve of a computer system is one measure of how complex, in depth, graphic and useful it can be. Less than ten years ago, early home computers were sold with just a few thousand bytes on board. Most choked on instructions to create graphics of any resolution and were very limited in their ability to run useful software.

The Apple II+ came with 48 Kilobytes, a fairly large amount of memory for a personal computer in the late seventies. It required a 16K expansion just to run UCSD Pascal. In 1983, the IIe was being shipped with 64K, and was expandable to 128K. The IIc was built with 128K.

These 8-bits can only directly address 64K. This is a limitation of their 8-bit address bus, the physical wiring linking the processor to memory banks.

Very simply, the amount of memory that is direct addressable is the amount of memory locations the processor can deal with at once. To make use of additional memory beyond 64K, Apple employed a trick called bank-switching that directs the processor to each 64K bank separately. Thus the computer can make use of more memory while the processor itself only deals with 64K at once.

The IIGS has a 24-bit address bus, which allows it to directly address 16 Megabytes of memory. This is actually limited by hardware and firmware to only 8.25 MB of RAM and 1 MB of ROM. So, while the 8-bits bank switch to allow more memory than they can directly address, the IIGS is limited from directly addressing all it can.

This is all more than interesting trivia. It explains why 8-bits and the GS use additional memory differently and how both are limited in their use of directly addressed RAM. How then, can adding RAM improve performance?

The 8-bits

In the 8-bit world, expansion RAM is used as a RAM disk, a rewriteable memory-based storage area the operating system uses like a standard floppy disk. Because the computer can access RAM faster than it can a mechanical drive device, buying an expansion RAM card for this purpose greatly reduces time spent accessing drives. RAM disks are faster than all but the fastest hard disks, so investing in expansion memory for a RAM disk may be a better investment than a hard disk for many 8-bit users. This is especially the case for those that want fast drive performance but don't really need the large capacity of a hard disk.

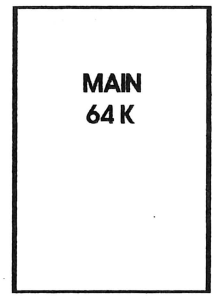
Beyond 128K, however, 8-bit systems usually can't use expansion RAM for anything besides a RAM disk. One exception is special program patches that allow AppleWorks to expand its desktop into expansion RAM allowing several large documents to be used at once.

The IIGS Memory Map

Besides being able to use a IIe-style RAM expansion board in one of its seven general purpose slots for a RAM disk, the IIGS has a special memory slot for system RAM, RAM disk and ROM disk expansion. This slot is different than the IIe's auxiliary memory slot, so cards cannot be swapped between them. To understand how IIGS memory expansion works, let's take an abbreviated look at how the IIGS maps out its memory.

The IIGS has much more memory expansion potential than the 8-bits; it does not need bank-switching to use more memory. However, for compatibility reasons, the IIGS maps out its memory in banks of 64K. Again, this has nothing to do with bank-switching, as all memory is still directly addressable. These 64K banks have hexadecimal addresses from $00 to $FF. Portions in this 16 MB range are not allocated for use: $80-$DF and $E2-EF.

The 8-bit Memory Map



A good portion of the 128K here depicted is gobbled up by the system for input/output and video display. ProDOS also takes a large chunk

Main and Auxiliary RAM blocks in a 128K Apple II; additional RAMdisk memory is not part of the memory map.

This leaves 8.25 MB of RAM and 1 MB of ROM. Built into the original IIGS is 256K ROM and 128K ROM; the rest is expansion.

Working With ROM

ROM starts at the top of the allocated space in the memory map, bank $FF, and extends downward to $F0. Factory ROM takes up the top banks of the ROM allocations. Some early memory cards allowed for ROM expansion, but most do not.

Video game cartridges are an example of ROM disks. The cartridge contains ROM chips on which the game is permanently programmed. This results is nearly instant-on results.

In concept, putting the IIGS system software in ROM like this would be very useful. However, ROM disks are limited to 896K on the standard GS and 768K on the ROM 3 revision, which uses 256K of the ROM space, banks $FC through $FF. In addition, expansion ROM can not be easily modified. However, with a small system, using a ROM disk for startup would be ideal. Even installing an often used application onto a ROM disk would be a significant performance boost.

ROM allocations thus take up the top MB of the memory map, leaving the rest for RAM, not counting the nearly 7 MB gap in the memory map that Apple chose to leave unallocated.

RAM Expansion

Let's take a look at what the IIGS has installed already: the slow and fast chunks of memory on the motherboard.

To include all of the speed sensitive graphic and timing circuitry of the early Apple II's in the IIGS, Apple produced a large scale integrated chip called the Mega II. It controls a special area of memory two banks wide: $E0-$E1. This 128K of "slow RAM" always operates at 1 MHz.

Both the ROM 01 and ROM 3 versions of the IIGS include this chunk of slow memory. On the ROM 01 machine, an additional 128K of fast RAM is included at the bottom of the memory map, from $00-$01. ROM 3's have 1 MB of fast RAM on board, $00-0F.

Addresses are left for expansion RAM up to $7F; that is, 8 MB of RAM is the most fast RAM a stock GS can address. This is not a real limitation. Although high performance Macs often have 8 MB or more installed, and IBM's OS/2 requires 8 MB upfront to even work properly, GS/OS is comfortable working with just a few.

Using Expansion RAM

Firmware design allows the IIGS to partition expansion RAM into a RAM disk like the other II's, conceivably up to 8 MB. Much more useful, however, is assigning the expansion RAM as standard fast system RAM. Few applications ask for more than 1 1/2 MB of RAM, but with a large system lugging around trunkloads of desk accessories, inits and fonts, it can be easy to have a system laying claim to over 2 MB itself. A memory intensive program like AppleWorks GS, with several modules open and many documents, along with a hoggish system, can easily eat up 4 MB, but even then, only half of the RAM space is used. What point is there in adding more RAM?

Well, besides a RAMdisk, there are two ways the IIGS can make good use of expanded RAM: GS/OS caching and DMA.

GS/OS employs a caching system to accelerate the workings of its graphic environment and speed up disk access. For example, pull-down menus are cached into RAM when first used for instant display when chosen later. Information from disk access too fast for the IIGS to handle is also cached into RAM to prevent the disk from having to slow down. It also ensures that data is available for access when GS/OS is ready, without having to wait for it. Caching in GS/OS even allows the IIGS to, in many cases, read with a FST from a file system faster than the native operating system could.

The best way to determine how large to set the cache is by monitoring RAM usage. RAM usage is broken down in the information box of Finder 6.0, as well as the AWGS info box (option select "About AppleWorks GS..."). Find out how much RAM your system is using, then partition the cache to the memory above that. We recommend having 1 MB more RAM than your current setup regularly uses. Setting this aside for the GS/OS cache is an effective cache size. If you need the memory, GS/OS will deallocate the cache.

DMA stands for direct memory addressing. This allows DMA hardware, such as Apple's high speed SCSI interface and C. V. Technologies' RAMfast SCSI card, to directly transfer information into system RAM, bypassing the processor for increased speed. Note that DMA is only good on the IIGS in the first 4 MB of RAM, and only one DMA device can operate at once.

Additional RAM also lets DMA work better. Apparently, however, only the RAMfast card can reliably deal with DMA in systems with more than 4 MB. And although DMA devices can usually be shut off, doing so sharply degrades performance.

The Bottom Line

Expanding your memory is an easy and cost effective way to enhance the performance of your system. Although 8-bits have a limited expansion potential, the addition of a RAM disk is a good way to speed up a disk intensive system.

Adding RAM to the IIGS makes it a better machine. It operates smoother and increases response, with many applications it frees up restrictions on documents open at once and accommodates larger file sizes without balking. With many good deals on RAM expansion available, it makes sense to install at least 4 MB of RAM in your system. It's also a good idea to choose a board that allows for expansion beyond that, as well.

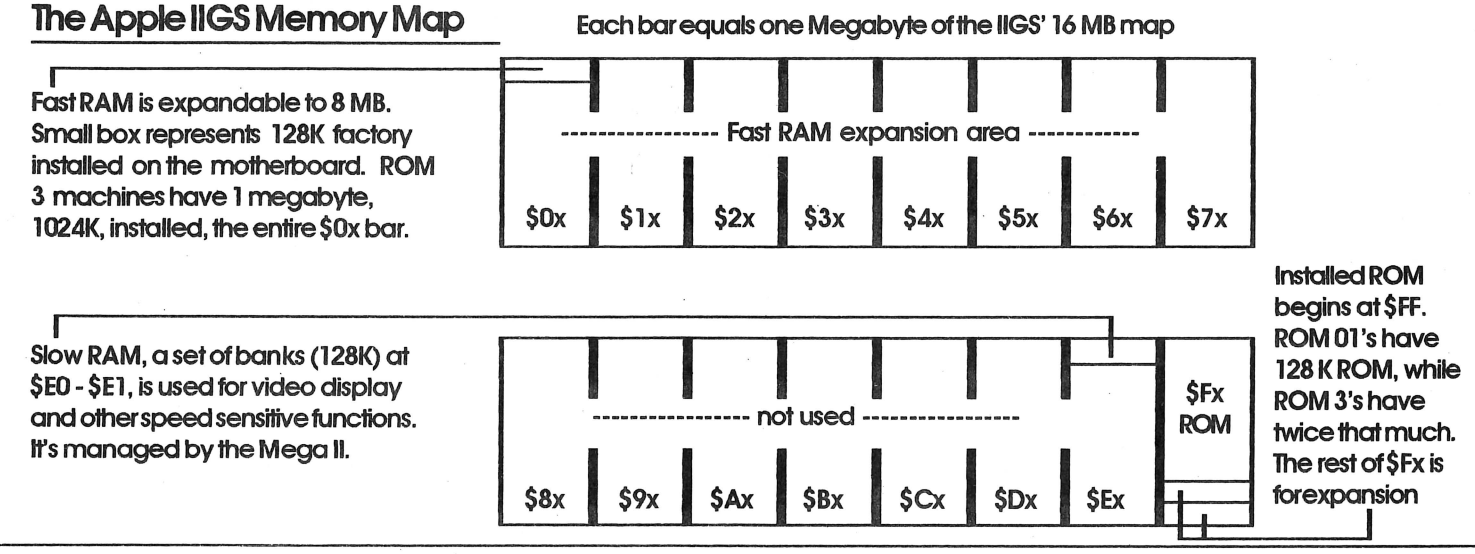
Read More About It

For more information on memory and the Apple II, look into the following publications.

Apple IIc Technical Reference
Apple IIe Technical Reference
Technical Introduction to the Apple IIGS
Apple IIGS Hardware Reference

All are part of the Apple Library and are published by Addison-Westley Publishing Company, Inc. Previously available through Apple Programmer and Developer Association, all titles are now available from APDA's Apple II keeper, Resource Central at (913) 469-6502.

The Apple IIGS Memory Map


Each bar equals one Megabyte of the IIGS' 16 MB map
Fast RAM is expandable to 8 MB. Small box represents 128K factory installed on the motherboard. ROM 3 machines have 1 megabyte, 1024K, installed, the entire $0x bar.
Fast RAM expansion area
$0x
$1x
$2x
$3x
$4x
$5x
$6x
$7x
Slow RAM, a set of banks (128K) at $E0 - $E1, is used for video display and other speed sensitive functions. It's managed by the Mega II.
not used
$8x
$9x
$Ax
$Bx
$Cx
$Dx
$Ex
$Fx ROM
Installed ROM begins at $FF. ROM 01's have 128 K ROM, while ROM 3's have twice that much. The rest of $Fx is for expansion

LATE NEWS & NEW PRODUCTS

We've combined our Late News and New Products departments this issue because our Late News was New Products.

GSTape 2.0

Tim Grams
CountyLine Technology
P.O. Box 462283
Garland, TX 75046
(214) 495-7675 after 7 P.M

GSTape 2.0 is a tape archival system for the IIGS. It requires GS/OS System 6.0, a SCSI tape drive and either a CV Tech SCSI interface card (RamFAST requires ROM 3.0) or Apple's SCSI Card. GSTape features multiple file, directory and volume selection for backup, and can perform incremental, script and timed backups.

Tape backup is more convenient than using many floppy disks, especially with large hard disks. GSTape provides IIGS users with an easy to use system for performing tape backups.

A demo of GSTape is available online. The fully functional program is available with complete documentation from the developer for $35. Add $5 for shipping outside the US. Current GSTape owners can upgrade for $15 by including their serial number with order. Developer Tim Grams can best be reached online at following connections:

AmericaOnline:	TGrams
CompuServe:	[73537,2601]
GEnie:	TGRAMS

AutoArk & Universe Master

EconTechnologies
97 N. Central Avenue, Suite B
Oviedo, FL 32765
(407) 365-4209

AutoArk is a data compression and encryption extension to GS/OS. It can be set to automatically compress data written to drives, allowing drives to hold up to twice as much information. AutoArk also can be configured to auto verify files for added protection from damage upon being written to a drive. Files are then transparently decompressed within any GS/OS application upon being opened, and compressed again when saved.

The AutoArk package also includes a Finder extension to allow manual file compression/expansion, password protection or encryption from the Finder. AutoArk uses the same data compression format as Universe Master's (Econ's drive management software) backup format, so backup data can be accessed from any application. AutoArk retails for $59.95.

UniverseMaster is a full featured disk management utility that includes file recovery, disk format repair, low level block management, flexible data backup and optimization, single or batch file copying or deletion and compression/encryption—all in a single application. Universe Master retails for $149.

UltraMacros 4.1

JEMSoftware
7578 Lamar Court
Arvada, CO 80003
(303) 422-4856

UltraMacros is a macro automation extension written by ex-Beagle Brother Randy Brandt. Brandt is now running JEM Software, and UltraMacros has been upgraded and combined with Ultra Extras, additional macros written with help from Mark Munz. The marriage of UltraMacros and UltraExtras has resulted in UltraMacros 4.1, available for $60.

Foundation 1.0.2

LunarProductions
1808 Michael Drive
Waukesha, WI 53186
(414) 549-9261

Foundation brings intelligent resource editing to IIGS developers, providing powerful management of System 6.0 resources.

Version 1.0.2 features intelligent copy, paste and deletion of all standard resources (for example, when copying a window Foundation also copies its dependent resources; when deleting a resource, it lets you find parent and dependent resources to remove them as well), true HEX/ASCII resource editing, an intelligent optimizer that accurately handles System Resources as well as resources with special characteristics, a script-based editor that lets you edit any resource in a structured format, and built-in support for native WYSIWYG resource editors. Custom resource templates can also be added to Foundation with the built-in, dynamic ScriptBuilder.

Included in the package is the Foundation Developer's Kit, which describes how to write your own resource editors. Retail price is $79.95; version 1.0.2 is a free upgrade to registered users.

Pointless 2.0 & TypeWest

WestCode Software, Inc.
15050 Avenue of the Sciences, Suite 112
San Diego, CA 92128
(619) 487-9200

Pointless 2.0 offers increased speed as well as decreased memory usage over earlier versions by incorporating improved algorithms and generating only characters actually called for by the system. Among version 2.0 other features is the ability to distinguish between bitmap fonts and TrueType outlines in menu listings and automatic incorporation of TrueType outlines found in the Fonts folder. Current users may upgrade for $19.95 by calling their upgrade hotline: (800) 448-4250.

TypeWest is a special selection of thirty to forty TrueType outlines not available in the public domain. Retail price is $49.95, but current Pointless users upgrading to 2.0 and new Pointless purchasers get a significant price break.

SwitchIt

Procyon, Inc.
PO Box 620334
Littleton, CO 80162
(303) 933-4649

SwitchIt allows loading of the Finder along with several other programs into memory at once, for operation and convenience similar to the Macintosh MultiFinder environment. Although only one application is in control at once, SwitchIt increases performance by allowing you to pause one application, instantly enter another, then return without reloading the first application or its data files. The more RAM in your system, the more applications SwitchIt can have installed.

Included in the SwitchIt package are NDAs to enhance the usefulness of having multiple programs in memory at once, including a scrapbook and clip manager to transfer data between applications.

SwitchIt has been found to be compatible with most GS/OS applications, including AppleWorksGS, Platinum Paint,

GraphicWriter III, Formulate, as well as system software applications such as the Finder and Teach. Procyon reports that certain applications that assume total control of the system may not work correctly with SwitchIt. Some games, for example, change system settings and patch toolsets.

Procyon plans to expand the package for further compatibility and utility. Retail price has been tentatively set at $59.95.

Fishhead's Children

Resource Central
PO Box 11250
Overland Park, KS 66207
(913)469-6502

Fishhead'sChildren is a new monthly publication covering the basics of other computer systems and how Apple II users can build bridges to them. The magazine will cover MS-DOS, Microsoft Windows, IBM OS/2, UNIX and Macintosh environments. It is designed for 'users who use more kinds of computers than they've read the manuals for'.

Fishhead's Children is available for $49 for 12 issues. Contact Resource Central for additional subscription information.

Drive Cleaner

Seven Hills Software
2310 Oxford Road
Tallahassee, FL 32304
(904)575-0566

DriveCleaner is a new cleaning system for Apple compatible 3.5" disk drives. The package combines software with the 3M cleaning disk and fluid to provide effective disk drive head cleaning. This cleaning disk is the only one approved and recommended by Apple Computer for use with its disk drives.

Drive Cleaner software directs drive heads to stay in contact with an unused part of the cleaning pad. The cleaning disk needs to be inserted only once and it rotates for the proper length of time. It also notifies you when to clean the drives and when to replace the cleaning disk. The cleaning disk included with the Drive Cleaner provides thirty cleanings; additional 3M cleaning disks may be purchased from any 3M distributor.

Drive Cleaner requires IIGS systems software 5.0.4 or later, and works with system 6.0. Suggested retail price is $34.95.

New Product reports are based on press releases or brief product examinations. Mention in this department should not be considered an endorsement or close review.

Are you an independent developer of Apple II products? We'd like to report on your new products as well. Send us information at our regular address (bottom of page two) and let us share your accomplishments with our Apple II readers!

Pointless Review from page 5

vast array of bitmap font files that gobble up memory and disk space and turn the Font folder into a jungle.

Pointless takes the case

As a control panel device, Pointless steps in and modifies the operation of the Font Manager in GS/OS. By generating a bitmap of any size only when called for, Pointless uses only the memory the fonts you need take up. Pointless also solves the problem of limited space on the system disk by allowing TrueType fonts to be on other disks and loaded in only when needed. Even if you have plenty of space on your hard drive, Pointless will tame the Fonts folder by replacing all of those bitmaps with single TrueType outline.

How does Pointless do it? When a font is requested, Pointless interrupts the system and checks to see if a bit map is available in the requested point size. If you have the bitmap in your Fonts folder, then Pointless passes it to QuickDraw II. If one is not available, Pointless generates a correctly sized bitmap from a TrueType outline. Pointless does not scale bitmap fonts; if you request a font not available as a TrueType outline, the Font Manager tries to scale a close bitmap itself.

When printing, Pointless generates the necessary oversize bitmaps just as if you had requested them while working in the document. Pointless does not know if a request is being made by you or the printer driver, it just produces the bitmap and hands it to the system. Pointless can also save any size of bitmap to disk, allowing 8-bit Apple II's that use GS type fonts with Superfonts or PublishIt!, for example to use TrueType fonts.

Additionally, Pointless allows TrueType fonts to be saved anywhere, not just in the Fonts folder on the system disk. This allows users who don't have a hard drive to make use of a large library of fonts without ever having to stop, install the wanted font on the system disk, and restart.

Pointless takes the cake

Pointless has no real limitations, but the GS does. Currently, the system only allows font to be 255 points, a limitation only when you consider high resolution oversizing. Some programs also impose limitations. The manual lists several programs and the largest point size they allow. (AppleWorks GS, for example, has a limit of 48 points, but this can be overcome by a widely available patch or by holding down command + option when selecting Choose Font. Much larger fonts become available, but at very large sizes may not act correctly.)

System 6.0 fixed the previous limitation of 64K being the largest size possible for a font. If you are using a previous version of system software, upgrade. System 6.0 is far superior.

Additional TrueType fonts are available everywhere. WestCode is publishing a package called TypeWest, and Macintosh formatted TrueType outlines (many converted from PostScript fonts) are widely available also. These may be directly imported without translation. Windows-style TrueTypes must first be translated into Mac ones. Note that not every TrueType outline will work; some are not up to the real specs and therefore will not be compatible.

With no competition, Alan Bird could well sit back and enjoy royalties. Instead, WestCode has just finished Pointless 2.0, with improvements in speed and ease of use. Previous versions allowed users to configure a limited character set to reduce the amount of characters Pointless had to generate.

But the revision, rather than generating the entire font at once, generates characters as they are typed, meaning only the characters you use are generated, and only when they are needed. This allows you to use option characters, such as ™, ®, ¶ and foreign language inflections without having to reconfigure. And both speed and memory usage are enhanced.

Recommendations

Pointless is a well designed tool that fits into the system transparently to expand the IIGS' abilities without complicating things or causing problems. Passport House wholeheartedly recommends Pointless for all GS users, even if they don't do heavy printing. And we'll be watching WestCode for new developments.

INDUSTRY PEOPLE

Industry People is an effort to introduce to the public all of the people behind the scenes that work to better the Apple II arena.

Software titles that have fallen from popular use have a new guardian. Tim Tobin, librarian of General Electric's national information exchange Apple II roundtable, has spearheaded the "Lost Classics" project to bring them back.

Many useful software applications that enjoyed a successful lifetime in past years but are now lacking commercial support and facing extinction can be preserved and supported for a useful future.

Online information on GEnie concerning Lost Classics referred to placing the programs into permanent storage, "stored as electronically compressed archives on optical disk cartridges." Besides this type of storage, rescued titles are uploaded into the GEnie A2 library for public distribution.

Tobin's Lost Classics program also seeks public publication of the programs' source code. Placing source code in the public domain allows other developers to update the code and recompile it into an updated version. With public domain source code available, programmers may also include portions of the original program into an application of their own.

Publicly available software & copyrights

It is important to note the different ways software can be distributed. Copying software for any reason (other than a personal backup) is illegal, whether for profit or not, if you have not been granted permission to do so. The same is true when including portions of another's source code into your own programs for distribution.

Freeware is software written for free distribution. You can give it to anyone, but you can't sell it. You can't usually include it in a package you are selling, either. Even though freeware can be copied, it is still under copyright. You can't modify it or use portions in your own programs you distribute without permission.

Shareware is similar to freeware, but the author asks you to send him a specified payment if you choose to use the program. If you don't pay for it, you are obliged to erase it.

Public domain is a term often misapplied. Freeware and shareware is not in the public domain. Nobody owns public domain; it is the public's to use however they want. If you plan to distribute or use public domain software source code, verify that it really is in the public domain. Often shareware or freeware programming is referred to as 'public domain', but unless a programmer releases all rights to a program, it is not.

Publicly distributed software (any of the above types) is often available through user groups or online services for a fee to cover the cost of distribution. Shareware authors depend on such wide distribution of their work to get something back from satisfied users. However, they often try to protect their software (from parasite companies that live off distributing their work) by adding a clause to their copyright notice stating that the product can only be distributed for free. This makes for a bugaboo, as online services and national user groups aren't really distributing them for free, although they don't make a profit. If you develop shareware or freeware, be sure to leave no questions behind as to how your work can be distributed.

Products benefiting from the Lost Classics project are not necessarily released as public domain. If you're not sure, find out for certain what it is and what rights are still held by the author.

Early project successes

The Lost Classics project has already saved a couple titles. Paul Lutus, author of Apple Writer and GraFORTH, has released both programs for the project.

Apple Writer was one of the first Apple II word processors; it is significant because it gave early Apple users a powerful Word Processing Language.

Tobin reported to Passport House that Apple Writer can "hold its own against many other programs with fancier interfaces and higher price tags. This program, in its several versions, gives the Apple II, II+, IIe, IIc, IIGS, and Apple III a common program for word processing. It is powerful enough to be the only word processor most people need for their Apple computer.

"Being able to track [Paul Lutus] down and get his permission to release Apple Writer as freeware allowed our Lost Classics program to be taken seriously from the start."

GraFORTH is a graphic version of the AppleDOS 3.3 FORTH programming language. Tobin described GraFORTH as "V ery advanced for its day in terms of 3D graphics and sound/music manipulation."

" Being able to track [Paul Lutus] down and get his permission to release Apple Writer as freeware allowed our Lost Classics program to be taken seriously from the start."

—Tim Tobin, Lost Classics Coordinator

"By itself," Tobin wrote, "this program is not likely to serve as a nexus for new GraFORTH based games (it is only DOS 3.3, after all), but it does raise the consciousness with respect to Lost Classics and what we hope to provide to the Apple II community. And there are still many 'hackers' out there who would love to play around with something like that. Anything which increases a user's enjoyment in their Apple II computer is a Good Thing."

Lutus' contributions have spawned further success; Don Thompson, who worked with Don Lancaster in the early and mid 80's to produce many extensions and patches for Apple Writer, volunteered releasing his add-ons as a shareware product, the WPL Expansion Kit.

The Kit "directly supports the usability of Apple Writer," Tobin wrote, "and is one of the side benefits we hoped to realize: the synergism between the new generation of software writers and users, and the older programs which are still very good, but no longer available."

Tobin also made reference to several other projects on the way, including a selection of games, although he was careful to avoid naming products with distributions rights not yet wholly obtained. He doesn't like unsubstantiated rumors.

If you or someone you know has written a commercial program for the Apple II that is no longer being distributed, or would like to volunteer your help, contact Tim Tobin. To make the Lost Classics project really take off will require the support of the Apple II community.

Contact:
Tim Tobin, Lost Classics Coordinator
GEmail: A2.Tim
Phone: (310) 813-5697

PASSPORT HOUSE REPORT

What can you expect from the Passport House Letter? Take a look at our sneak preview of what's to come. Would you like us to review a certain product or have a topic you'd like to see us tackle? Tell us about it!

Test Drives : We like to put things to the test in a group, either to see how well various products work together, or how they perform in a competitive head to head comparison. On our schedule:

- What's the difference between WestCode's HardPressed and Econ's AutoArk? We'll test them out together.
- How you can team up Apple II music software and hardware for professional results.
- We evaluate Apple's Video Overlay Card with available graphic software for dynamic home video.
- Watch the top modems duke it out. Then we compare the best telecommunications programs.
- Which art application is the king of features? Find out in a upcoming issue.
- A good deal on a hard drive is not impossible. We'll take several head to head on performance, features and price.
- Plus all kinds of new stuff on the way!

MaximumOverdrive : increase your computability. Make work easier, faster, simpler.

- Speed through software: how you can boost performance without loosing another slot.
- Organizing and optimizing hard drives for best results.
- Brut speed with floating point math accelerators and maximized speed cards.
- Focusing on ergonomics to make work easier

Industry People: Meet the people on the other end

- Regular peeks at hot developers and Apple II gurus.
- Meet the Apple people who build our environment.
- Info on foreign programmers making magic on the II.

Special Reports: Apple II's put to practical application

- Hypermedia's befriending the education market: how the Apple II can keep its ground in schools.
- Using data from other systems: what you can do already and what's to come.
- Pairing the CD-ROM with your II for instant access to worlds of information: what you'll need to make it happen.

YOUR REPORT CARD

Take a minute to tell us your impression. Please complete the form below or make a copy for us. We'd like to know what you think.

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Product Test Drives	0 1 2 3 4 5 6 7 8 9	Late News	0 1 2 3 4 5 6 7 8 9	Eran Paige	0 1 2 3 4 5 6 7 8 9

ERAN PAIGE — Eran's usually pretty comical, but having trouble with extended anology this month. He should be getting over it soon.

Life and the Car

The science of automobile manufacturing has rapidly progressed through the last century, both in terms of technology and ease of use. In its early years, it was not too surprising for a rumbletrap automobile to send its driver into unintended directions, resulting in serious problems for its operator and others who may be in the way. Early automobile enthusiasts who devoted long hours working on their mechanical beasts were often thought of as gearhead eccentrics.

Today's car designs—in the Western world, at least—don't allow for such hostile operation to occur. Few today do not drive a car of their own or make use of some other motorized vehicle to get them where they're going. The commercial world depends on motorized transport to do its business worldwide. Imagine the chaos that would result if the vehicles in New York City suddenly refused to work for a day.

Its acceptance as a daily necessity for most has impelled automakers to constantly upgrade their offerings to woo potential buyers into their dealerships. Leaders are identified by the prices they can ask. Using slick advertising, manufacturers portray their models as more than the metal, upholstery and plastic that make them up; their cars become alive and exude a personality of their own.

Buyers even develop emotional attachments to their vehicles. After reality blurs sufficiently, buyers become firmly convinced that the car they possess must be more than ordinary. It's got to be the newest thing, have the high horsepower and sport a slick skin.

Of course, there's always the few that enjoy the classics. They like working with the car they've got. They have the same emotional attachment, but it's not because of image advertisement. They are used to the feel, the handling, the familiarity of the dash. They know that their car is just as capable in sticking to the road as the new models. With a little work, their performance can be boosted beyond most new cars. And parts often come cheaper, so you can do more with less.

I love my old car. It handles great, and goes as fast as I need. I'll be hanging on to it for a while. With new tires, a rebuilt engine, a new CD changer and a fresh coat of paint, it's a new car. Sometimes I go to the dealership and spy out the new stuff. Yes, there are things that make me drool, but a lot to dislike, too. I know that today's brand spank'n new car will look outdated when the new model year comes out in a few months. As long my car gets me where I'm going and is this much fun to drive, why quit?

Life and the Computer

The science of computer manufacturing has rapidly progressed through the last decades, both in terms of technology and ease of use. In its early years, it was not too surprising for a homebrew computer to send its operator into unintended directions, requiring long hours of frustrating troubleshooting for the user and others who got themselves involved. Early computing enthusiasts who devoted long hours working on their electronic beasts were often thought of as nerdy eccentrics.

Today's computer designs—in the Apple world, at least—don't allow for such hostile operation to occur. Few today do not use a personal computer or make some other use of computers to get them through the day. The commercial world depends on computerized transactions to do its business worldwide. Imagine the chaos that would result if the computer equipment in New York City suddenly refused to work for a day.

Its acceptance as a daily necessity for most has impelled computer manufacturers to constantly upgrade their offerings to woo potential users into buying their models. Leaders are identified by the number of models they can introduce. Using slick advertising, manufacturers portray their models as more than the metal, silicon and plastic that make them up; their computers become alive and exude a personality of their own.

Buyers even develop emotional attachments to their systems. After reality blurs sufficiently, buyers become firmly convinced that the computer they possess must be more than ordinary. It's got to be the newest thing, have the high megahertz and sport a slick GUI.

Of course, there's always the few that enjoy the classics. They like working with the system they've got. They have the same emotional attachment, but it's not because of image advertisement. They are used to the feel, the interface, the familiarity of the keyboard. They know that their computer is just as capable in crunching numbers as the new models. With a little work, their performance can be boosted beyond most new cars. And peripherals often come cheaper, so you can do more with less.

I love my Apple IIGS. It handles great, and goes as fast as I need. I'll be hanging on to it for a while. With a fast hard drive, an accelerator, a new CD-ROM and a fresh coat of paint, it's a new II. Sometimes I go to the dealership and spy out the new stuff. Yes, there are things that make me drool, but a lot to dislike, too. I know that today's brand spank'n new Macintosh will look obsolete when the new line comes out in a few months. As long my IIGS gets the job done and is this much fun to work with, why quit?

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